

Outstanding value in a high-performance single-socket tower server



Product Guide

March 2010

IBM System x3100 M3

Product Overview

CONTENTS	
Product Overview	1
Selling Features	1
Key Features	3
Key Options	5
x3100 M3 Images	6
x3100 M3 Specifications	7
The Bottom Line	9
Server Comparison	10
For More Information	11
Legal Information	11

Outstanding price/performance in a value tower server

Suggested uses: *Small and medium businesses looking for technology to help improve business efficiency.*

Often small-to-medium sized businesses have limited IT budget and resources, and rely on partners or multitalented employees to help manage the company's network. Business needs for efficiency improvement and retention of critical data require the use of a server that is easy to get up and running quickly and is dependable. You need to squeeze as much as possible out of your IT dollars, while saving cost on features not needed in an SMB environment. The IBM® System x3100 M3 is an ideal first server to meet those business needs. It was built for speed, yet eliminates costly design features found in general-purpose servers that are unnecessary for smaller businesses.

The single-socket x3100 M3 supports the latest **quad-core** Intel® Xeon® and dual-core Pentium®, Core i3®, and Celeron® processors, to offer impressive computing power in a **minitower** design that can fit under a desk. It offers up to **16GB¹** of industry-standard enterprise-class **1333MHz DDR3** memory with **ECC** (Error Checking and Correcting) protection—for high performance and reliability. An integrated high-speed **Gigabit Ethernet** controller is standard, as are **three** high-performance/low-latency **PCIe** adapter slots, as well as one legacy **PCI** slot.

All models offer impressive scalability for an entry server, including an internal storage capacity of up to **4TB²** (via **four** enterprise-class 3.5-inch **1TB SATA II** HDDs). Selected models include the IBM **ServeRAID-BR10iL V2** controller, which provides internal **SATA RAID-0/1** support. Other models include **RAID-0/1** in firmware. Alternatively, the optional **IBM 3Gbps SAS HBA v2** provides hardware-based **RAID-0/1** support for internal **SATA** HDDs, as well as support for external **SAS/SATA** HDDs and internal/external **tape** storage. For data backup, the x3100 M3 supports internal or external **tape drives** or an **RDX Removable Disk Cartridge** drive.

Standard in the x3100 M3 is a Baseboard Management Controller (**BMC**) that enables users to manage and control the server easily—both locally and, using an optional **Virtual Media Key**, remotely. This high level of manageability is designed to keep costs down and the system up—even when network usage increases. These advanced features help maximize network availability by increasing uptime, as do **temperature-controlled fans** with **Calibrated Vektored Cooling™** and industry-standard **IPMI 2.0** support, including **highly secure remote power control**.

With the inclusion of these advanced features, and unique IBM service features implemented in system management tools, the x3100 M3 is designed for superior uptime.

If you need single-socket, quad- or dual-core computing price/performance in a budget tower package, the x3100 M3 is the ideal system.

Selling Features

Price/Performance

The x3100 M3 offers numerous features to boost performance and reduce product and operating costs:

- The choice of a low-cost **dual-core Core i3**, **Pentium**, or **Celeron** processor or a robust **server-class quad-core Xeon** processor offers a range of performance at ultralow prices. **64-bit extensions** provide the flexibility to run 32-bit and 64-bit applications concurrently.
- **Energy-efficient 73W processors** draw less power and produce less waste heat than high-wattage processors, thus helping to reduce your energy costs.
- Ultra-fast server-class **1333MHz PC3-10600 DDR3 ECC** memory provides up to **50%** higher

¹ Maximum memory and disk capacity may require the replacement of standard components with the largest supported component available.

² Model-specific. GB equals 1,000,000,000 bytes when referring to hard disk drive capacity. Accessible capacity may be less.

- memory throughput and lower latency than DDR2 memory, while consuming up to **30%** less energy. DDR3 memory also consumes up to **30% less** energy than DDR2 memory.
 - **Three high-speed PCIe adapter slots** offer investment protection by supporting high-performance adapters, such as 10Gb Ethernet, Fibre Channel and InfiniBand cards.
 - Up to **four** (model-specific) 3.5-inch enterprise-class **SATA II** hard disk drives offer terrific price/performance (incorporating up to **3Gbps** throughput).
 - The integrated **Gigabit Ethernet** controller provides high-speed network communications.
 - A **high degree of device integration**—including the SATA and video controllers, and Gigabit Ethernet—lowers costs and frees up valuable adapter slots.
-

Flexibility

The x3100 M3 has the ability to grow with your application requirements, thanks to:

- A choice of quad-core or dual-core processors, including **2.4 to 2.66GHz Xeon**, **3.06GHz Core i3**, **2.8GHz Pentium**, or **2.26GHz Celeron** processor with **73** or **95W** maximum power draw, and **1333MHz** or **1066MHz** memory access.
 - Up to **16GB** of high-speed DDR3 system memory in **four** DIMM sockets.
 - **Up to three available high-performance PCIe** slots (model-specific) and **one available 32-bit PCI** slots (for legacy adapters) in all models.
 - Up to **four** internal **3.5-inch** fixed **SATA II** HDDs offer low-cost/high-capacity enterprise-class storage. The 3.5-inch drives provide a maximum of **1TB** apiece of internal storage.
 - An **available 5.25-inch** drive bay supports either a **half-high tape drive** or an **RDX Removable Disk Cartridge** drive, for cost-effective data backup. A **dedicated 3.5-inch drive** is reserved for an optical drive.
 - The **IBM 3Gbps SAS HBA v2** controller provides **RAID-0/1** support for *internal* SATA hard disk drives and **RAID-0/1/1E** for *external* SAS/SATA and tape drives.
 - The **eight USB 2.0** ports are up to **40X** faster³ than older **USB 1.1** ports. This provides speedy access to external HDDs (non-arrayed), optical drives, tape drives, and other USB devices. Two ports are on the front of the unit and four are on the back. In addition, there are **two internal** USB 2.0 port for use with a tape drive, RDX Removable Disk Cartridge drive, or USB flash drive containing a hypervisor.
-

Manageability

Powerful systems management features simplify local and remote management of the x3100 M3:

- An optional **Virtual Media Key** provides additional systems management capabilities, including graphical console redirection over LAN; and remote redirection of PCI video, keyboard and mouse (cKVM). And it does all this without consuming a valuable adapter slot.
 - **IPMI 2.0** supports highly secure remote system power control using data encryption. This allows an administrator to restart a server without having to visit it in person, saving travel time and getting the server back up and running quickly and securely. It also adds new features to those provided by IPMI 1.5, including **VLAN** support, **Serial over LAN**, enhanced authentication and encryption algorithms (**RMCP+** and **AES**) and a **firmware firewall**.
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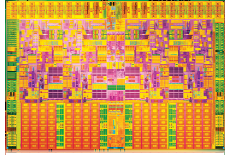
Availability and Serviceability

The x3100 M3 provides many features to simplify serviceability and increase system uptime:

- **Server-class components**, including the processor, memory, chipset, power supply, and others, are built for the rigors of an “always-on” environment. This helps reduce the risk of failure and life cycle costs, versus using a PC as a server.
 - **ECC memory** provides error correction not available in PC-class “servers” that use parity memory. Avoiding system crashes (and data loss) due to soft memory errors can mean greater system uptime
 - **Toolless cover removal** provides easy access to upgrades and serviceable parts. Similarly, adapters and memory can be installed and replaced without tools. This can mean less time (and therefore less money) spent servicing the x3100 M3.
 - **Temperature-controlled fan** adjusts to compensate for changing thermal characteristics. At the lower speeds it draws less power and suffers less wear. Also important in an office environment, temperature-controlled fans produce less ambient noise than if they were constantly running at full speed.
-

³ Data transfer rates may be less than the maximum possible.

Key Features



High-Performance Processors

The x3100 M3 supports one high-performance Intel Xeon, Core i3, Pentium, or Celeron processor, as the performance needs of your business dictate. The x3100 M3 offers a choice of processor clock rates, power draw, and cache sizes:

- **95W quad-core Intel Xeon models X3430 or X3450** at 2.4 or 2.66GHz (respectively), with 64-bit extensions, **1333MHz** memory access, **8MB** of shared L3 processor cache, and low power draw (**23.75W**) per core
- **73W dual-core Intel Core i3 model 540** at 3.06GHz, with 64-bit extensions, **1333MHz** memory access, **4MB** of shared L3 processor cache, and reduced power draw (**36.5W**) per core
- **73W dual-core Intel Pentium G6950** processor operating at 2.8GHz, with 64-bit extensions, **1066MHz** memory access, **3MB** of shared L3 processor cache, and reduced power draw (**36.5W**) per core
- **73W dual-core Intel Celeron G1101** processor operating at 2.26GHz, with 64-bit extensions, **1066MHz** memory access, **2MB** of shared L3 processor cache, and reduced power draw (**36.5W**) per core

The **dual-core** processors contain **two complete processor cores**; **quad-core** processors, similarly, contain **four** cores. The processors also contain one shared cache. The shared cache is dynamically allocated between cores as needed. The cores appear to software as physical processors. The two-core processors offer considerably higher performance than a same-speed processor with a single core. Likewise, four-core processors offer considerably higher performance than a same-speed processor with two cores.

Intel **Extended Memory 64 Technology (EM64T)** 64-bit extensions allow the Xeon processor to use large memory addressing when running with a 64-bit operating system. This in turn lets individual software processes directly access more than 4GB of RAM, which was the limit of 32-bit addressing. This can result in much higher performance for certain kinds of programs, such as database management and CAD. Additional registers and instructions can further boost performance for applications written to use them. Contact your software providers to determine their software support for EM64T.

1333MHz memory access offers up to **25%** higher throughput at the same processor clock speed than **1066MHz** memory access.

Intelligent Power Capability powers individual processor elements on and off as needed, to reduce power draw.

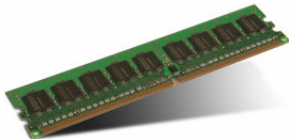
Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.

High-Performance, Low-Latency DDR3 ECC Memory

The x3100 M3 ships with one DIMMs installed and supports up to **16GB** of unbuffered DIMM (**UDIMM**) memory in **4** DIMM sockets. It uses **PC3-10600** double data rate III (**DDR3**) memory (operating at **1066**, or **1333MHz**, depending on the processor type) for fast access, and provides ECC memory protection. (**Notes:** Non-ECC memory can be used as well, but reduces system availability. Mixing non-ECC and ECC memory in the same system is supported, but results in the server operating in non-ECC mode.)

The x3100 M3 supports either **1**, **2**, or **4** DIMMs. When 2 or 4 DIMMs are installed, memory operates in **two-way interleaved** mode for increased performance.

Memory is available in capacities of **1GB**, **2GB**, or **4GB** DIMMs.



Drive Bays

The x3100 M3 contains **six** drive bays in total, including **four 3.5-inch** bays that support fixed **SATA II** drives and two 5.25-inch bays that support optical drive or tape drives. The HDD bays support slimline (1.0") drives, totaling up to **4TB** per system, respectively.

A **5.25-inch** bay contains a half-height **DVD-ROM** drive, with a SATA interface, upgradeable to a **DVD-RW** drive. A **second 5.25-inch** bay is available for a **half-height tape** drive, or an **RDX Removable Disk Cartridge** drive. An optional *external* USB floppy drive may be used, if needed.

Large HDD Storage Capacity

The x3100 M3 supports up to **four 3.5-inch** fixed **SATA** drives:

- **7,200 RPMs** —250, 500, or **1TB** (**4TB** maximum capacity)

Note: Enterprise-class 500GB+ SATA drives offer higher reliability and higher performance compared to lower-capacity SATA drives.





Disk Controllers

All x3100 M3 models include an integrated SATA II controller. It provides data transfer speeds of up to **3Gb** per second⁴ across the SATA bus for up to **four 3.5-inch** internal Serial ATA (**SATA**) drives. In addition, the system chipset includes **RAID-0/1** support in firmware. This provides the advantages of RAID at no additional cost, although without the performance boost of hardware RAID.

Selected models also include a ServeRAID controller for greater performance. The IBM **x4 PCIe ServeRAID-BR10il V2** controller offers hardware **RAID-0/1/1E** support. The controller supports up to **four 3.5-inch SATA** drives at **6Gbps** (half-duplex). The serial design of the SATA bus allows maximum performance to be maintained as additional drives are added.

Optionally, the **x8 PCIe Gen 2 IBM 3Gbps SAS HBA v2** controller provides **RAID-0** (striping) and **RAID-1** (mirroring) support for internal **SATA** HDDs and **SAS/SATA** tape drives. For external storage, this controller enables **RAID-0/1** support, as well as **RAID-1E** (mirroring with an odd number of drives) for external SAS/SATA storage and tape drives.

High-Performance Adapter Slots

The x3100 M3 provides **three PCIe** (PCI Express) adapter slots standard. **Slot 1** is a **x16** ("by 16") **Gen 2 (16GBps)** slot. **Slot 2** is a **x8 Gen 2 (8GBps)** slot. **Slot 3** is a **x4 Gen 1 (2GBps)** slot. All slots are **full-length/full-height**. In addition, **Slot 4** is a **32-bit/33MHz PCI full-length/full-height** slot to support legacy adapters. **PCI Express Gen 2** is the next generation of high-performance, low-latency, serial I/O bus. The **ServeRAID-BR10il V2** controller, if installed, would be in **Slot 3**.

Internal Backup

The x3100 M3 supports internal **half-high backup** options. Supported technologies include:

- **DDS-5** (internal USB or SATA)
- **DDS-6** (internal USB or SATA)
- **RDX Removable Disk Cartridge** (internal USB or SATA)
- **IBM Half-High 400/800GB LTO-3** (SAS)

External tape backup support is available using the optional IBM 3Gbps SAS HBA v2 controller.

Gigabit Ethernet Controller

The x3100 M3 includes an integrated Intel **WG82574T** Gigabit Ethernet controller for up to 10X higher maximum throughput than a 10/100 Ethernet controller.

It also supports **Wake on LAN**[®] and **PXE** (Preboot Execution Environment) flash interface. Optional PCI adapters offering failover and load balancing between adapters are available for added throughput and increased system availability.

Efficient Cooling

A strategically located fan, combined with efficient airflow paths, provide highly effective system cooling for the x3100 M3, known as **Calibrated Vektored Cooling**. The server includes one non-hot-swap fan. In addition, the power supply contains a fan.

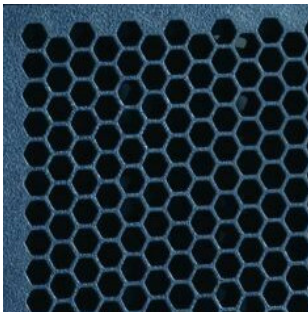
The fan automatically adjusts speeds in response to changing thermal requirements, from minimum RPMs to maximum RPMs, depending on the internal temperature. When the temperature inside the server increases, the fan speeds up to maintain the proper ambient temperature. When the temperature returns to a normal operating level, the fan returns to its default speed. Why not simply run the fan at 100% capacity all the time? For several good reasons: to reduce the ambient noise, reduce the wear-and-tear on the fan and reduce the server power draw. The reduction in ambient noise and power draw may be relatively minor for a single server, but put several in an office and it can make a significant difference.

In addition, the server uses **hexagonal ventilation holes** in the chassis. Hexagonal holes can be grouped more densely than round holes, providing greater airflow through the system cover.

This cooling scheme is important because newer, more powerful processors generate a significant amount of heat, and heat must be controlled for the system to function properly.

Other Features

- **Eight USB 2.0 ports** — Provides flexibility to add high-speed external devices. The USB 2.0 specification supports up to 480Mbps transfer rates. (**Note:** Not all USB 2.0 devices are



⁴ Data transfer rates depend on many factors and are often less than the maximum possible.

capable of achieving this rate.) **Two** ports are provided on the front of the server and **four** on the back. In addition, **two** internal ports are available to support a USB tape drive, RDX Removable Disk Cartridge drive, or USB flash drive containing a hypervisor.

- **Toolless chassis** — The cover can be opened without tools and many components can be added, removed, and replaced without tools, including DIMMs, the processor, the optical drive and PCIe adapters. This can save significant servicing time.

Extensive System Support Features

The IBM services and technical support portfolio provides world-class, consistent, high-quality service and support. The x3100 M3 server offers a number of tools and services designed to make ownership a positive experience. From the start, IBM programs make it easier for you to plan for, configure and purchase System x or xSeries servers, get them running and keep them running long-term. These features include IBM ServerProven® and extensive technical support offerings.



The IBM **ServerProven** program provides the confidence that specific options and operating systems have been tested on the server and are officially supported to work together. It is updated frequently to ensure that the latest compatibility information is always at your customers' fingertips.

IBM offers extensive **technical support** by phone and via the Web. Support options include links to forums/newsgroups, problem submission, online shopping support, service offerings, device drivers for all IBM product lines, software downloads and even upcoming technical seminar worldwide schedules and registration. Also available are remote installation, configuration and usage support for System x and xSeries hardware and software, as well as onsite custom services to provide the level of expertise you require.

IBM Maintenance and Technical Support solutions can help you get the most out of your IT investment by reducing support costs, increasing availability and simplifying management with integrated support for your multiproduct, multivendor hardware and software environment. For more information on hardware maintenance, software support, solution support and managed support, visit <http://ibm.com/services/maintenance>.

Advanced Systems Management Capabilities

The x3100 M3 has a high level of systems management capabilities that are well-suited to remote locations as well as to stand-alone environments. Features include the Automatic Server Restart, Predictive Failure Analysis, Wake on LAN support, and PXE support.

Automatic Server Restart (ASR) helps reduce downtime by restarting the server automatically in the event of a system lockup. ASR technology is a combination of hardware circuitry tied into the server's system reset function and a device driver. As long as the server continues running, the ASR watchdog timer will keep being reset, but if the operating system crashes or the hardware freezes somehow the ASR software will be unable to reset the hardware timer. If the timer is not reset within five minutes, it automatically triggers the ASR hardware, which immediately restarts the server (and logs an ASR event). These features are designed so that *no more than five minutes can pass before the server is restarted*.

Wake on LAN permits the server to be remotely powered on if it has been shut off. Once powered up, the server can be controlled across the network, using the **Preboot Execution Environment (PXE)**.

Like Wake on LAN, PXE is system firmware. It enables software to take control of a system before the BIOS, operating system or applications are loaded (using Wake on LAN/PXE) and lets an administrator perform many low-level tasks remotely that would otherwise require a visit to each system. These tasks may include such things as formatting a hard disk drive, updating system firmware, or deploying a Windows or Linux operating system.

Key Options

IBM options for System x servers help you take your servers to a higher level

You can rely on System x options to supply a complete solution for your business needs. Options help create an optimized server system to meet your data protection, storage and availability needs. Every IBM option is designed and tested for peak performance and flexibility, helping to maximize your return on investment. The combination of System x servers and options lets you keep your fingers on the pulse of your e-business.

Memory — Memory is a significant factor in systems application performance. Adding more memory to a System x server is one of the most effective ways to increase application performance. For best performance in a server with a quad-core processor, there should be twice as much memory available as for a dual-core processor. The x3100 M3 provides two-way interleaving.

Hard Disk Drives — IBM hard disk drives help you improve the transaction and cost

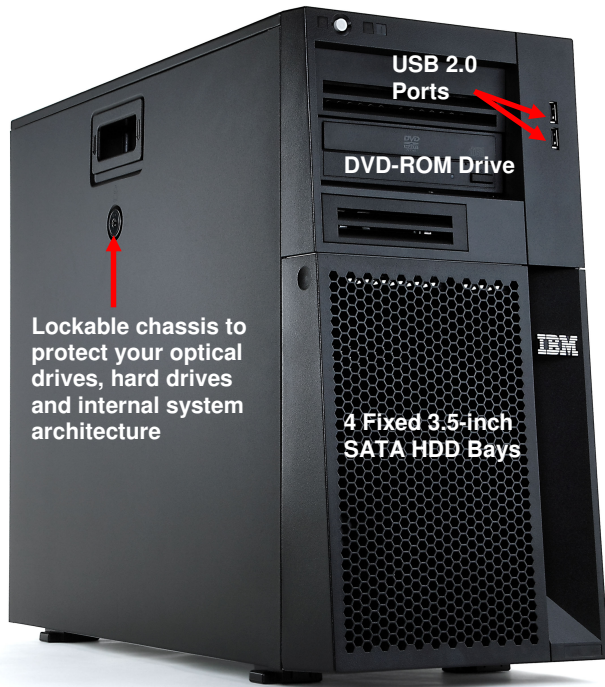
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performance of your System x servers. The choice of hard disk drives can be a critical aspect of maximizing the I/O throughput of the system. **SATA II** hard disk drives are available for the x3100 M3 with capacities up to **1TB** (3.5-inch) apiece at **7,200 RPMs**.

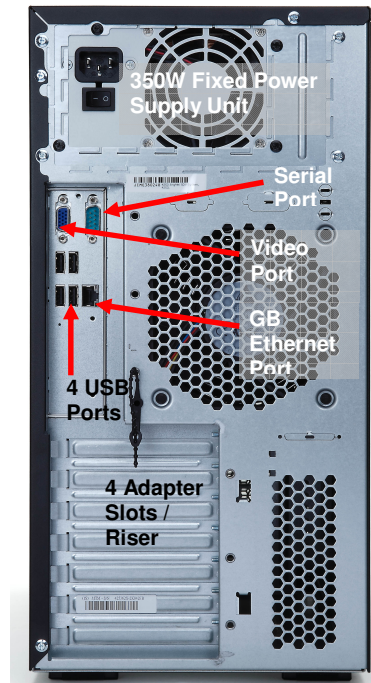
The optional **x8 PCIe Gen 2 IBM 3Gbps SAS HBA v2** controller offers **RAID-0/1/1E** support for internal SATA HDDs and SAS/SATA tape drives. It also supports external **IBM System Storage®** disk and tape drives.

x3100 M3 Images

Front View

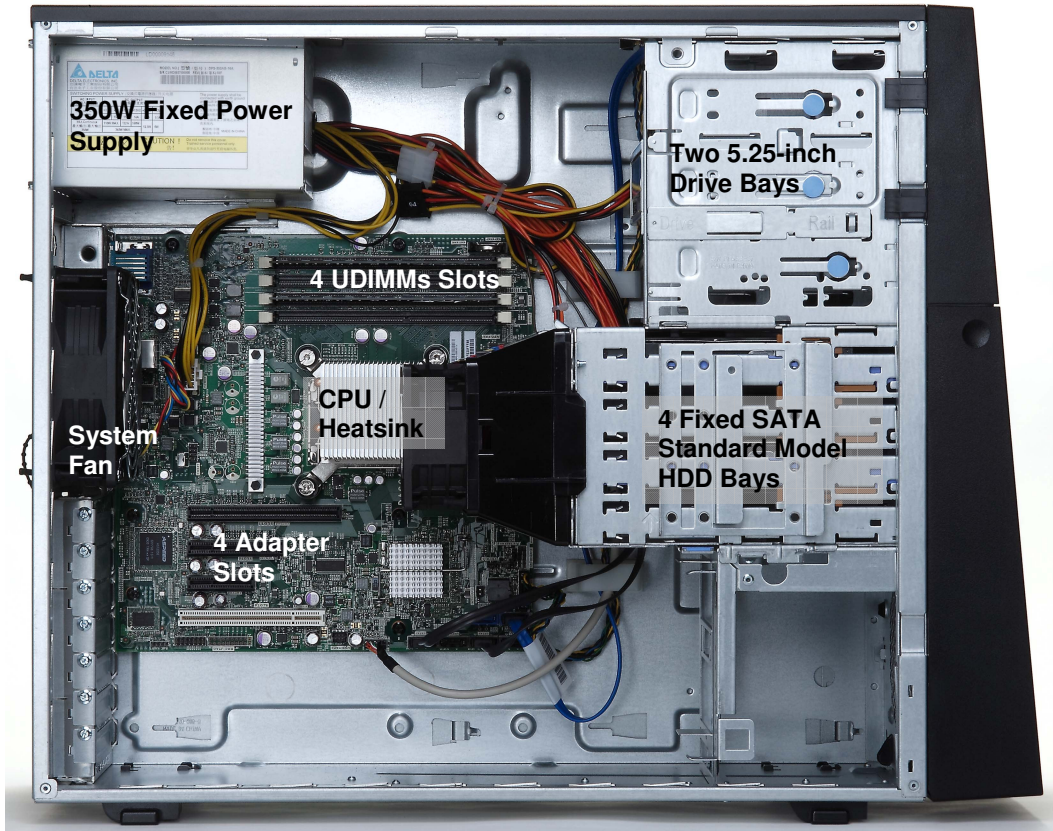


Rear View



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Interior View



x3100 M3 Specifications				
Machine type	4253-22x, 42x, 62x, B2x, D2x			
Form factor	5U tower			
Processor type	Quad-core Xeon (X34xx) 2.4GHz X3430 (B2x), 2.66GHz X3450 (D2x)	Dual-core Core i3 (540) 3.06GHz (62x)	Dual-core Pentium (G6950) 2.8GHz (42x)	Dual-core Celeron (G1101) 2.26GHz (22x)
Maximum processor power draw	95W (B2x, D2x)		73W (22x, 42x, 62x)	
Front-side bus speed	1333MHz (62x, B2x, D2x)		1066MHz (22x, 42x)	
# of processors standard / maximum	1 / 1			
Internal L3 cache	8MB (shared)— B2x, D2x	4MB (shared)— 62x	3MB (shared)— 42x	2MB (shared)— 22x
Chipset	Intel 3420			
Standard memory⁵	2GB (1 x 2GB)—62x, B2x, D2x		1GB (1 x 1GB)—22x, 42x	
Maximum memory	16GB (4 x 4GB UDIMMs)			
Standard memory type	PC3-10600 (1333MHz) DDR3 ECC			

⁵ Maximum memory and disk capacity may require the replacement of standard components with the largest supported component available.

Outstanding value in a high-performance single-socket tower server

x3100 M3 Specifications		
Memory access rate	1333MHz (62x, B2x, D2x) 1066MHz (22x, 42x)	
Memory interleaving	Yes (two-way, with 2 or 4 DIMMs)	
DIMM capacities supported	1GB, 2GB, 4GB UDIMMs	
# of DIMM sockets total / available	4 / 3	
# of DIMMs supported	1, 2, or 4	
Chipkill protection supported	No	
# of drive bays total / available	6 / 4 (optical, 1HDD installed)	6 / 3 (optical, 2 HDDs installed)
# of 3.5-inch HDD drive bays total / available	4 / 3 (22x, B2x)	4 / 2 (42x, 62x, D2x)
# of 5.25-inch bays total / available	2 / 1 (optical drive installed)	
Maximum HDD capacity	4TB (4 x 1TB)	
HDD capacities supported	3.5-inch SATA II 250, 500, 1TB — 7,200 RPMs	
# of HDDs standard	1 x 250GB (22x, B2x)	2 x 250GB (42x, 62x, D2x)
# of optical drives standard / optional	1 DVD-ROM (in dedicated 5.25" bay) / DVD-RW	
# of floppy drives standard	None (optional USB)	
Internal backup supported	1 half-high (5.25-inch or 3.5-inch) DDS-5 or DDS-6 tape drive (SATA or USB); or 1 RDX Removable Disk Cartridge drive (SATA or USB); or IBM Half-High 400/800GB LTO-3 (SAS)	
Internal backup standard	None	
Disk drive technology	Fixed SATA II	
Integrated disk controller	4-port SATA II (via chipset)	
Integrated RAID controller	ServeRAID-BR10iL V2 (no cache)— RAID-0/1/1E (D2x)	RAID-0/1 via chipset (all other models)
Optional RAID controllers supported	IBM 3Gbps SAS HBA v2 (no cache)—internal RAID-0/1 for SATA HDDs and SAS/SATA tape drives; external RAID-0/1/1E for SAS/SATA HDDs and tape drives	
External disk drives supported	No	
# of adapter slots total / available	4 / 4	
# of PCIe x16/x8 Gen 2 slots (8GBps) ⁶	1 full-height/half-length	
# of PCIe x8/x8 Gen 2 slots (8GBps) ⁷	1 full-height/full-length	
# of PCIe x4/x4 Gen 1 slots (2GBps) ⁸	1 full-height/full-length	
# of 32-bit PCI 5V legacy slots	1 full-height/full-length	
# of video ports	1 (rear)	
Video controller	Shared with BMC	
Video memory	32MB DDR2 SDRAM	
Maximum video resolution at 32-bit color	1024 x 768 x 32-bit color at 85Hz	

⁶ x16/x8 Gen 2 slots can accept x1, x4, x8, or x16 Gen 1 or Gen 2 adapters running at x1, x4, x8 or **x8** throughput, respectively.

⁷ x8/x8 Gen 2 slots can accept x1, x4 or x8 Gen 1 or Gen 2 adapters running at x1, x4 or x8 throughput, respectively.

⁸ x4/x4 Gen 1 slots can accept x1 or x4 Gen 1 adapters running at x1 or x4 throughput, respectively.

x3100 M3 Specifications			
Gigabit Ethernet controller	Intel WG82574T		
# of Gigabit Ethernet ports	1 (rear)		
# of serial ports	1 (rear)		
# of mouse ports	None (USB-attached)		
# of keyboard ports	None (USB-attached)		
# of USB 2.0 ports	6 external ports (2 front, 4 rear); plus 2 internal connectors for tape drive, RDX Removable Disk Cartridge drive, or USB flash drive containing a hypervisor		
Integrated systems management controller	BMC		
Light path diagnostics support	No		
# of power supplies standard / maximum	1 / 1		
Hot-swap/redundant power supported	No		
# of fans/blowers standard / maximum	1 / 1 fan (plus one fan in the power supply)		
Hot-swap/redundant fans supported	No		
Heat emitted: minimum / maximum BTUs per hour	185 / 853 (model-specific)		
Maximum altitude	7,000 ft; 2,133 m		
Operating temperature range	50 – 95° F; 10 – 35° C (up to 3,000 ft / 914.4 m); 50 – 90° F; 10 – 32° C (3,000 ft to 7,000 ft / 914.4m to 2,133m)		
Operating humidity range	8-80%		
Dimensions (HWD) / weight	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">17.25" (438.2mm) H 8.5" (215.9mm) W 21.25" (539.8mm) D</td> <td style="text-align: center; padding: 5px;">30.9 (minimum) – 37.5 lb (maximum) 14 – 17 kg</td> </tr> </table>	17.25" (438.2mm) H 8.5" (215.9mm) W 21.25" (539.8mm) D	30.9 (minimum) – 37.5 lb (maximum) 14 – 17 kg
17.25" (438.2mm) H 8.5" (215.9mm) W 21.25" (539.8mm) D	30.9 (minimum) – 37.5 lb (maximum) 14 – 17 kg		
Operating systems supported	Microsoft Windows Server 2008 & R2 (Standard/ Enterprise Editions) 64-bit, Microsoft Small Business Server 2008 Standard/Premium Edition 64-bit, RHEL 5 32-bit, RHEL 5 64-bit with or without Xen, SLES 10/11 32-bit, SLES 10/11 64-bit with or without Xen		
Length of limited warranty	1 year (parts and labor) ⁹		

The Bottom Line

The x3100 M3 is an extremely powerful value system, incorporating leading-edge industry-standard features and adding IBM-unique innovations:

Price/Performance

- **Low-cost/high-throughput processors** — A choice of one **2.4** or **2.66GHz quad-core** Xeon processor, or **3.06GHz dual-core Core i3** processor, or **2.8GHz dual-core Pentium** processor, or **2.26GHz dual-core Celeron** processor
- **Generous cache** — **2MB, 3MB, 4MB, or 8MB** of L3 processor cache (processor-specific)
- **64-bit extensions**
- **Fast memory** — **1333MHz PC3-10600 DDR3** ECC memory standard with **two-way interleaving**
- **Fast memory access** — High-speed (**1333MHz**) access between the Xeon or Core i3 processor and memory; **1066MHz** memory access in the Pentium or Celeron models

⁹ For terms and conditions or copies of the IBM Statement of Limited Warranty, call 800-772-2227 in the U.S. In Canada call 800-426-2255. IBM makes no representation or warranty regarding third-party products or services including those designated as ServerProven or ClusterProven. Telephone support may be subject to additional charges. For warranties including onsite labor, a technician is sent after IBM attempts to resolve the problem remotely. International warranty service is available in any country in which this product is sold.

- **Fast disk technology** — Integrated high-speed (3Gbps) **SATA II** controller (model-specific) and drives; RAID support standard
- **Fast communications** — Integrated **Gigabit Ethernet** controller
- **Fast I/O** — Three **PCIe** adapter slots, including two **x8** slots

Flexibility

- **Large memory capacity** — Up to **16GB** of **DDR3 RDIMM** memory, using **4** DIMMs
- **Large disk capacity** — Up to **4TB** of internal SATA storage (model-specific)
- Internal **tape** or **RDX Removable Disk Cartridge** backup storage
- **High-performance external expansion** — **Six external** 480Mbps **USB 2.0** ports (two front, four rear), plus **two internal USB 2.0** ports for tape or **RDX Removable Disk Cartridge drive**, or USB flash drive containing a hypervisor
- **Hardware RAID support** standard in selected models; firmware RAID standard in all models
- **Four available** adapter slots:
 - ❑ **One physical x16 / electrical x8 PCIe Gen 2** high-speed slot
 - ❑ **One physical x8 /electrical x8 PCIe Gen 2** high-speed slot
 - ❑ **One physical x4 /electrical x4 PCIe Gen 1** high-speed slot
 - ❑ **One legacy 33MHz PCI** slot
- Integrated **DVD-ROM** drive

Manageability, Serviceability and Availability

- **BMC**
 - ❑ **IPMI 2.0** support
- **Highly available RAID arrays**
- **ECC memory protection**
- **PFA support**
- **Efficient cooling**
- **Toolless chassis**

Server Comparison Chart

The following table shows the suggested uses for the respective IBM System x tower servers, including comparisons of the uses for which each server is best suited:

		Requirements								Towers					
		Scalability	Floating Point Performance	Memory Throughput	Integer Performance	I/O and Storage	Density	High Availability	Systems Management	Security	Distributed Deployment	X3100 M3	X3200 M3	X3400 M3	X3500 M3
HPC	Cluster / HPC		■	■	■	■	■								
	Modeling & Simulation		■	■	■	■	■								
	High Performance DB		■	■	■	■	■								
	Business Intelligence		■	■	■	■	■				●				
Web 2.0 / Web 3D	Search		■	■	■	■	■								
	Content		■	■	■	■	■								
	Communities		■	■	■	■	■								
	Commerce		■	■	■	■	■								
Business Applications	Collaboration		■	■	■	■	■								
	ERP/SCM		■	■	■	■	■					○	○	●	●
	CRM		■	■	■	■	■					○	○	●	●
	Hosted Client		■	■	■	■	■					○	○	●	●
Infrastructure Applications	Point of Sale		■	■	■	■	■					○	○	●	●
	Branch Office		■	■	■	■	■					○	○	●	●
	Virtualization		■	■	■	■	■					○	○	●	●
	Business Continuity		■	■	■	■	■					○	○	●	●
	Database		■	■	■	■	■					○	○	●	●
	Email/Collaboration		■	■	■	■	■					○	○	●	●
Infrastructure Applications	Security		■	■	■	■	■					○	○	●	●
	Web Serving		■	■	■	■	■					○	○	●	●
	File & Print		■	■	■	■	■					○	○	●	●



For More Information

IBM System x Servers	http://ibm.com/systems/x
IBM System x and BladeCenter Power Configurator	http://ibm.com/systems/bladecenter/powerconfig
Standalone Solutions Configuration Tool	http://ibm.com/servers/eserver/xseries/library/configtools.html
Configuration and Options Guide	http://ibm.com/servers/eserver/xseries/cog
ServerProven Program	http://ibm.com/servers/eserver/serverproven/compat/us
Technical Support	http://ibm.com/server/support
Other Technical Support Resources	http://ibm.com/servers/eserver/techsupport.html

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MB, GB and TB = 1,000,000, 1,000,000,000 and 1,000,000,000,000 bytes, respectively, when referring to storage capacity. Accessible capacity is less; up to 3GB is used in service partition. Actual storage capacity will vary based upon many factors and may be less than stated.

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will depend on considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

Maximum internal hard disk and memory capacities may require the replacement of any standard hard drives and/or memory and the population of all hard disk bays and memory slots with the largest currently supported drives available. When referring to variable speed CD-ROMs, CD-Rs, CD-RWs and DVDs, actual playback speed will vary and is often less than the maximum possible.

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